

MATERIAL SAFETY DATA SHEET

SRM Supplier: National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive
Gaithersburg, Maryland 20899-2320

SRM Number: 187d
MSDS Number: 187d
SRM Name: Sodium Tetraborate
Decahydrate (Borax) pH Standard
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SECTION I. MATERIAL IDENTIFICATION

Material Name: Sodium Tetraborate Decahydrate (Borax) pH Standard

Description: Standard Reference Material (SRM) 187d is intended for use in preparing solutions for calibrating electrodes for pH measuring systems. SRM 187d is a crystalline material provided in a unit of 30 g.

Other Designations: Sodium Tetraborate Decahydrate (sodium borate; 10-hydrate; borax; sodium biborate decahydrate; sodium pyroborate decahydrate; boric acid; disodium salt; borax decahydrate; decahydrate; sodium tetraborate decahydrate; disodium tetraborate decahydrate)

Name
Sodium Tetraborate Decahydrate

Chemical Formula
 $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$

CAS Registry Number
1303-96-4

DOT Classification: Not regulated by DOT

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Component	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Sodium Tetraborate Decahydrate	≈ 100	ACGIH TLV-TWA: 5 mg/m ³
		Human, Oral: LD _{LO} : 709 mg/kg
		Rat, Oral: LD ₅₀ : 2660 mg/kg
		Mouse, Intravenous: LD ₅₀ : 1320 mg/kg

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Sodium Borate Decahydrate
Appearance and Odor: white crystals; odorless
Molecular Weight: 381.37
Specific Gravity (H₂O = 1): 1.73
Melting Point: 62 - 75 °C
Water Solubility: 6.25 %
Solvent Solubility: soluble in glycerol; insoluble in acids

NOTE: This material is certified **only** for pH(S). For the actual pH values, refer to the corresponding Certificate of analysis.

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable

Method Used: Not Applicable

Autoignition Temperature: Not Applicable

Flammability Limits in Air (Volume %): UPPER: Not Applicable

LOWER: Not Applicable

Unusual Fire and Explosion Hazards: This material is a slight fire hazard. In contact with strong oxidizers is a fire and explosion hazard. With zirconium when heated, it produces an explosive reaction.

Extinguishing Media: Use extinguishing media appropriate to the surrounding fire.

SECTION V. REACTIVITY DATA

Stability: X Stable Unstable

Conditions to Avoid: None documented

Incompatibility (Materials to Avoid): Metals; oxidizing materials

See Section IV: "Fire and Explosion Hazard Data."

Hazardous Decomposition or Byproducts: Thermal decomposition will produce sodium and boron oxides.

Hazardous Polymerization: Will Occur X Will Not Occur

SECTION VI. HEALTH HAZARD DATA

Route of Entry: X Inhalation X Skin X Ingestion

Health Hazards: This material is harmful by ingestion and may be harmful by inhalation or absorption through the skin. It causes eye and skin irritation as well as irritation of the mucous membranes and upper respiratory tract.

Signs and Symptoms of Exposure: Inhalation and ingestion has produced nausea, vomiting, diarrhea, stomach pain, fever, irregular heartbeat, headache, difficulty breathing, tremors, drowsiness, loss of coordination, disorientation, lung congestion, internal bleeding, blood disorders, heart damage, kidney damage, ear damage, convulsion, and coma.

Medical Conditions Generally Aggravated by Exposure: Not Applicable

Listed as a Carcinogen/Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	<u> </u>	<u> X </u>
In the International Agency for Research (IARC) Monographs	<u> </u>	<u> X </u>
By the Occupational Safety and Health Administration (OSHA)	<u> </u>	<u> X </u>

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area thoroughly with water for at least 15 minutes. Obtain medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain immediate medical assistance.

Inhalation: If adverse effects occur, remove the victim to fresh air. If breathing is difficult, give oxygen; if victim is not breathing, give artificial respiration by qualified personnel. Obtain immediate medical assistance.

Ingestion: If a large amount is swallowed, obtain immediate medical assistance.

TARGET ORGAN(S) OF ATTACK: Central nervous system and kidneys.

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled: Keep unnecessary people away, isolate area and deny entry. Collect spilled material in appropriate container for proper disposal. Keep out of water supplies and sewers.

Waste Disposal: Dispose in accordance with all federal, state, and local environmental regulations.

Handling and Storage: Provide local exhaust ventilation system. Wear splash resistant safety goggles. Provide an emergency eye wash fountain and a safety drench shower in the immediate work area. Wear appropriate chemical resistant clothing and gloves when handling. Use methods to prevent formation of dust.

NOTE: Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them.
DO NOT wear contact lenses in the laboratory.

Store material in a tightly closed container in a cool dry place. Store with bases. Keep separated from incompatibles.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Source: MDL Information Systems, Inc., *Sodium Borate Decahydrate*, 19 March 2003

Disclaimer: Physical and chemical data contained in this MSDS are provided for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.